(402) 416-5235 or (402) 470-3678

# Fully automated Individualized Service Guideway Vehicles

After over a hundred and fifty years of repeated improvements and successful test track studies we still do not have advanced transportation demonstration any where in the world. Not one single totally grade separated low cost guideway example has been allowed to be installed after hundreds of attempts that can at any foreseeable time in the future replace automobile and truck use with a universal public transportation system. Automobile truck, bus and railway use and most marine and air carrier use is totally obsolete when rationally compared in service offerings with known guideway potentials. The existing transportation industries maintain themselves with enforced economic and political inertia and nothing else.

Fully automated miniature autonomous transportation vending machine systems of the right design elements are lower in cost and more desirable than truck, bus, train and auto use. personal rapid transit or PRT has been demonstrated to be about one half to one sixth the cost of automobile use requiring no subsidy if it is allowed to replace auto use. PRT is faster by at least three times than urban and rural auto travel and truck shipment at a lower cost with a more comfortable ride. PRT can be always on demand when any user decides to ship or travel, with a few second of wait, anywhere along a low traffic guideway grid section.

By replacing street use cities become like green quiet parks with all traffic segregated from all land uses in an overhead light weight monorail system. Look at the monorail in use at the Oklahoma city fair grounds for the last few decades to see how small and unobtrusive the beam ways can be. Their need be no vehicle lighting or noise. All emergency services can be performed with fewer people with much faster response times on a guideway network where all traffic flows in all weather at aircraft speeds uninhibited by poor visibility. glare icing conditions, the deepest imaginable blowing snow drifts and flooded areas. All public sanitation and and water utility services can be transferred to batch PRT delivery with property modifications.

When the vehicle that takes you to work or school every day and to all shopping and recreational activities also can take you to another city at 200 MPH to 400 MPH directly from your house or business then you would never need to suffer the inconveniences of air terminal travel again. PRT intercity travel costs of from under 1¢ a mile for group service or no more than about 2¢ to 5¢ a mile for single vehicle occupancy service. The low cost of building miniature guideways, the high full vehicle turn around rate, low energy use per passenger mile traveled each year for mass produced vehicle capacity that is lower in cost than airliner or rail service vehicle and the elimination of all operating, management, dispatching and monetary transfer human labor allows the service cost reduction. PRT entrained speeds can be compared to commercial aircraft door to door speeds up to about 900 miles today. Quickly all PRT trips will be faster than air flights with the introduction of evacuated tube PRT.

The all grade and land use separated aerial PRT guideways and vehicle movement is visually much less intrusive than surface vehicle use even with the small elevated monorails going down the centers of every block in town. You could walk or bike anywhere in PRT dominant territory without fear of being run over.

PRT vehicles can have body lowering hoists so freight and passengers can be doored and unloaded at ground or building floor level along any low traffic guideway section or right at the doors or inside every structure in all communities. PRT vehicle floors need only be about one to two inches thick so wheel charis and automated autonomous self propelled wheeled cargo containers can self roll on and off the vehicles with a short door threshold ramp. Carbon fiber tape leaders on the hoists can allow egress

from monorails even 200 feet to 300 feet above surfaces below. Using advanced direct drive stepper motor winches and level wind strap cable reels with improved tape cables the hoist weight should not exceed about 5% of gross vehicle weight. PRT vehicles ideally should be all gull wing side door accessed so no door posts or isle ways are needed for access directly to seats and floor areas.

PRT is a replacement for all the transportation we use today accept for airline flights for wealthier people over about 900 miles and the shipment of items too large or heavy to fit inside a PRT vehicle or about 0.1% of all goods shipped which would still have to go by truck or air. Most bulkier items moved are a direct result of the road vehicle culture. Most products could be redesigned to fit inside the PRT maximum size with out diminishment of function.

General References; skytran.net,"Flyway" or swedetrack.com, search higherway.us , "Advanced Transit Association", "Transportation Alternatives", "taxi-2000", all the works on PRT by Professor Ed Anderson, the Transportation Research Board TRIS files search for "personal rapid transit" 660+ technical papers and conference proceedings abstracts and full text locations, *Innovation and Public Policy* a 400 page book by Catherine Burke on the political science and sociology issues that affect PRT available from E-Text on the internet in paper or disc. See the Monorail Society web site for historical references. See the Electroautomatic high speed railway work of David G. Weems 1884 to 1889 and Electric Carrier Corperation work 1907 to 1913 information, original documents and artifacts avialable from the National Archives and Smithsoinan Instsitute and Library of Congress. PRT video clips of a few historic PRT systems and the Monorail Society video available from Jim Burden. Most PRT pictures and applied data have disappeared from the main engineering libraries accept in little read conference proceedings and materials avialable from isolated and primary sources. It would be good to get all of the documentation into one place.

The following is a request, in the general public interest, for humanitarian reasons, that all government and industry transportation providers look seriously at a well developed form of Individualized, fully automated, monorail guideways as a total transportation replacement for road vehicle use as well as most common carrier and public transportation. This is not to promote any out lawing of existing transportation but to allow free market competition for the superior system to beat out inferior vehicle and right of way formats. The old fashioned transportation systems are maintained today only by nostalgia, familiarity and the force of government purchase control over all major transportation investments promoted by the existing industrial and professional providers.

The personal rapid transit or PRT guideway grids are less visually intrusive than the street and parking system we tolerate today only out of ignorance about the alternative that never is allowed to get a serious mention in transportation studies. PRT is less disruptive of all land uses than all road ways, railroads, channels, commercial harbors, dedicated A.C. power transmission corridors and airports. PRT is a replacement for all of these. PRT can also mostly eliminate a need to periodically dig up and refurbish or expand sewer and water utility grids by PRT batch automated handling of these services.

PRT could become the main form of freight, passenger and pick up and delivery transportation world wide. Within about two decades the process of removing unneeded roads and parking lots could commence fixturing the land to green areas or placement of new structures between the existing ones or additions as needed onto existing structures. New kinds of living and commercial areas could be built up that are impossible today with road vehicle, airport and railway use.

PRT vehicles are ideally under about 9 square foot frontal area, 100 pounds per linear foot of gross vehicle weight or about 50 to 90 pounds per linear foot of net vehicle weight carried on the access guideways and about twice this figure for commercial guideways and through lines between cities. PRT vehicles require lower profile single file seating to reduce the air resistance and the energy use at very high speeds. PRT vehicles are independent monorail vehicles that offer transportation services to any one that requests it so long as a user is not found degrading the vehicles and can pay for the

services. Any transportation subsidies would have to be made to the individuals directly since the PRT vehicles should be free from political controls. PRT vehicles are like full freight and passenger service aerial taxicabs that have unlimited operating hours and ranges since they take their power directly form the guideways electrical supply. Each vehicles proportional use should be paid for incrementally out of their on board monitored debit account.

PRT vehicles are under full time user direction for all but unsafe or illegal uses. PRT vehicle will take misusing occupants directly to the nearest law enfacement facility after warnings and a record of the activity is made.

PRT cabs can as needed group up with other vehicles going to similar destinations and merge in motion into passing trains of other wise independent PRT vehicles. These trains can be of any length because all adjacent vehicles share mutually beneficial information allowing any combination of shared multiple unit control. The payment of any train acceleration charges are made by the individual vehicles as they loin up with or depart a train from the front or require the train to slow so they can catch up with its slip stream for flat ended merging of parallel sided vehicles. The inflatable streamlining ends have not been refined but the principles are fairly simple. Anti friction surfacing and turbulence and boundary layer reduction techniques will pay well over the life of the vehicles often quickly exceeding in energy savings the initial cost addition on the vehicle.

PRT operates in its own exclusive right of way path never intersecting any cross traffic and not interfering with activities on the ground. This allows PRT vehicles to travel at aircraft speeds, higher than all high speed rail and potentially higher than any current large train sized maglev proposal. PRT will not have any accidents and will have the lowest insurance cost of any existing transportation. For instance the Lincoln Omaha commuter rail system proposals would cost about 41% of it's operating budget each year just for insurance because of grade crossing and derailment hazards that are unknown to monorails.

Ideler PRT vehicles have to provide perfect transportation for all transportation users as the freight and passenger users have always wanted the services to be not as the providers and professionals can make profit from the users. The fully automated individualized guideway systems can be easily made faster than all ground based transportation and most air transport trips. PRT does not need special right of ways or ground or elevated station or maintenance facilities.

PRT can be located in the aerial space above side walks, road shoulders, flood planes and stream beds, along lake or ocean shore lines out in the water, in ditches, under the canopy of deep forests and through hilly and mountainous terrain where highways would be impossible or undesirable. Most urban PRT would be located in alley ways or along the center of blocks between or over private property. there is little or no disruption even during the construction of the guideways.

PRT is a pure systems engineering optimization project. The guideway economic advantages do not require people to have an open mind or blind faith. By designing solutions to all transportation problems accept for an unknown increase in common species bird strikes and the inability to haul large single items bigger than appliances and counters and furniture. All other transportation related problems are solved with one set of design arrangements. PRT solves all transportation problems and non auto user access to environmentally neutral public freight and passenger mobility that goes every where that autos go with few commonly accessed exceptions.

Wealthier people trade money for personal time in faster more comfortable transportation. Poorer people trade personal time for lower cost but often less comfortable, reliable and slower transportation. Personal transportation means greater personal flexibility to get better jobs go to schools with more opportunities to learn and shop where prices are lowest or merchandise is best and seek medical care or go to all kinds of appointments, church and recreational possibilities.

Public transportation is always presented as mass transportation even in federal and local government goals and definitions. Mass transportation involves infrequent movements of expensive to run vehicle or trains of vehicles. The individuals needs are not treated as relevant to the service offering as road vehicle use treats people. People must be in full control of their transportation scheduling, travel very fast and pay out as little as possible to attract riders.

With fully automated individualized monorails as public transportation or PRT everybody would be able to to travel several times faster as a replacement for all forms of mobility but the longest air lie flights. Of the vehicles are light enough per linear foot when loaded to an allowable capacity the light weight guideways can be built for about $175,000 to $250,000 a one way access guideway mile if self lowering vehicles are used to eliminate any need for expensive elevated access guideways. This low cost access guideway network would allow every structure that is commonly accessed to be directly accessed without any parking or special drive ways, garages or other special accommodations. for commercial and multiple occupant accessed buildings the guideways can for about $10.000 to $50,000 a structure be equipped with a prefabricated entry door for the guideway vehicles to load and unload inside the structure or a prefabricated attachment weather resistant interior access portal. Approximately one vehicle every 20 seconds to 30 seconds could load or unload with each one of these facilities. The PRT vehicles do not park or accumulate any where so unlike with road vehicles possibly one tenth to one twentieth of the number of guideway vehicles are needed verses road vehicle for the same level of truck and passenger movements. PRT vehicles imediately go on to the next user or the places on the system where empties are lacking to keep near by waiting empties waiting for the quickest response to calls for service. When a user desires a unoccupied but personal possession filled PRT vehicles can be requested to roam indefinitely in a near by low traffic block, keeping out of the way of through PRT vehicles. such roaming would have to be held by a parson who could afford the about $2 an hour hold fee for non debt retired vehicles and about 50¢ an hour hold fee for older whole systems vehicles after about thirty years of guideway use. Their would be no need for PRT parking of any kind system wide with initial development. Pirate PRT vehicle owners could pay for their own parking and roaming fees of they could afford it so while the poorest people would have better transportation service than the richest person can afford today at a lower cost than owning and driving used reliable automobiles they might still find some wealthy people with differentiated services.

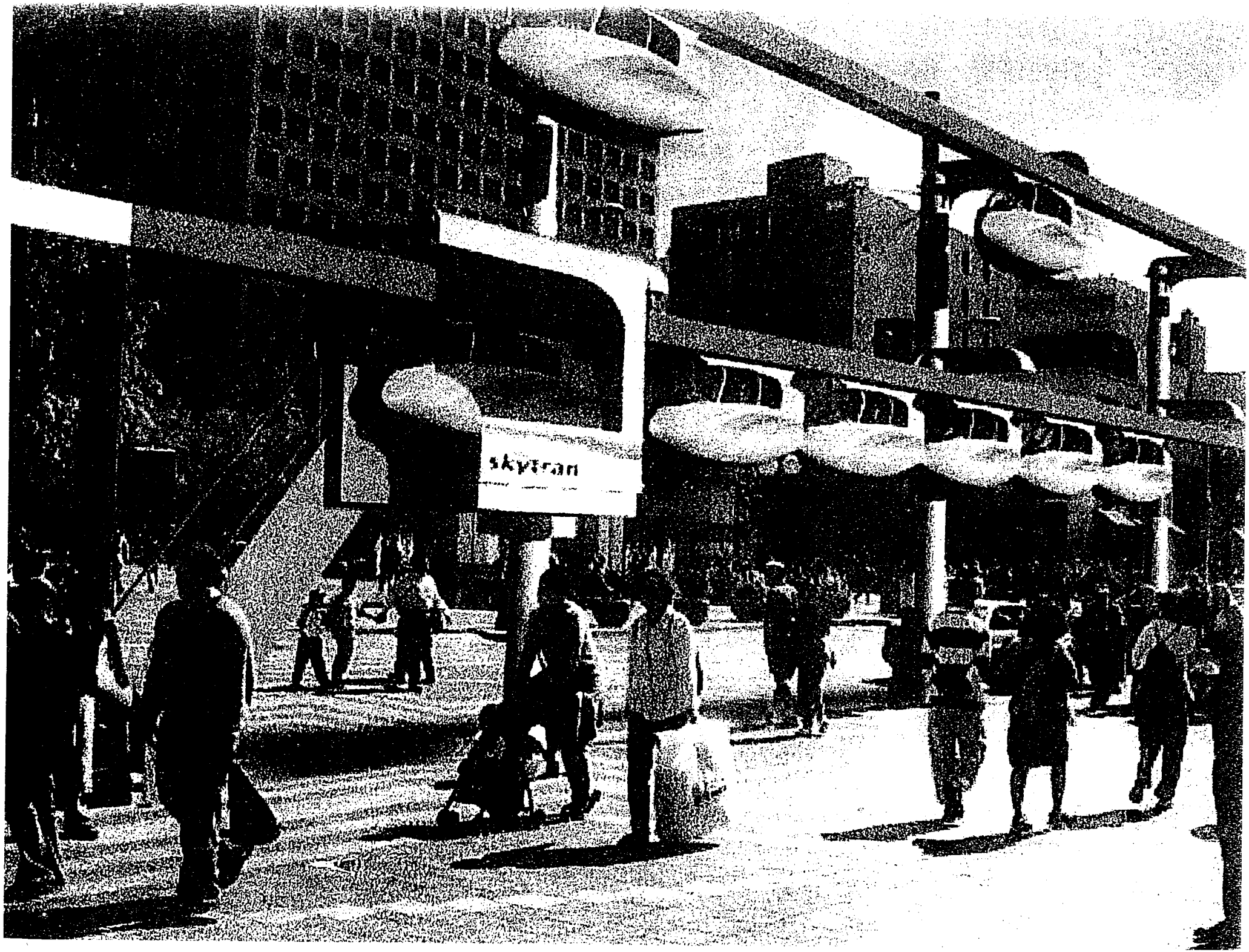
Some PRT vehicles could have small hot and cold meal and drink vending machines on board as an additional time saver and a convenience on longer trips. Such machines would be adaptations of the best vending technologies now being introduced for small office or business vending. When empty the vehicle takes itself to the nearest vending machine local replenisher for service. The cost of the items sold on board would have to be set by the price the suppler charged and the cost of averaged maintenance of the vending equipment and empty miles needed to access the supplies and service, There would be no profit taken because the public service PRT vehicles of themselves can be fully automatically self managed as non profit self owned business units if an exception is made to the corporate laws of states to allow E-Sign law business decisions to extend to management decisions for automated self owned businesses. PRT vehicles and guideways should like wise not be charged property taxes because they can be non profit self formula managed. This means that maintenance employees have to be independent contractors and all interest decisions have to be made by user choices avialable for systems section and vehicle debt recovery management plans handled by bond retirement and not speculative stocks that profit some people for ever. Funding and management of PRT manufacturing companies and maintenance contractors is up to them so long as their books are open for periodic audit to see that they are not cheating the system with undesirable pricing or service seeking bait and switch schemes.

If The airlines or Amtrak went right beside your house and stopped to pick you up at any time of day or night 365 days every year, you wanted a ride, cost less than driving your car and went directly to your school, work place and all the shops and places you need to get to, then you would ride trains and planes always. Planes and trains and buses hey do none of this so you drive your car instead. Cars are comparatively slow by aircraft standards and fairly expensive to use by full rail train or ferry boat standards. Planes, ships and trains are huge and unmanuverible in tight areas. This is the reason

# 6. Conclusions

The conclusions of this survey are the following:

- Present transit is not competitive
- Innovative systems offer many of the qualities of private cars
- ITS in car traffic can be applied to transit
- Direct non-stop trips on demand cut transit trip times to half
- Small-scale systems may replace buses and trams
- Several developments are ready for implementation
- The new guideway systems cost less than trams
- There are several suitable applications in Sweden
- Opportunities for development by Swedish industry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